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Statistical Analysis of Aliquot Sequences

Let $s(n) = \sigma(n) - n$ denote the proper sum of divisors function. 1n his 1976 M.Sc. thesis, Stan Devitt presented theoretical and numerical evidence, using a "new method of factoring called POLLARD-RHO", that the average order of $s(n)/n$ in successive iterations of $s(n)$ (Aliquot sequences) is greater than 1. These results seemingly lent support to the Guy/Selfridge Conjecture that there exist unbounded Aliquot sequences.

In this talk, we describe our on-going efforts to expand and update Devitt's computations, by considering the more-appropriate geometric mean of $s(n)/n$ as opposed to the arithmetic mean considered by Devitt, and greatly extending Devitt's computations using modern factoring algorithms.

This is joint work with K. Chum and R. Guy.